

Submit 1 Copy To Appropriate District  
Office  
District I - (575) 393-6161  
1625 N. French Dr., Hobbs, NM 88240  
District II - (575) 748-1283  
811 S. First St., Artesia, NM 88210  
District III - (505) 334-6178  
1000 Rio Brazos Rd., Aztec, NM 87410  
District IV - (505) 476-3460  
1220 S. St. Francis Dr., Santa Fe, NM  
87505

State of New Mexico  
Energy, Minerals and Natural Resources

Form C-103  
Revised August 1, 2011

OIL CONSERVATION DIVISION  
1220 South St. Francis Dr.  
Santa Fe, NM 87505

|                                                                                                                                                                                                                       |                                                                  |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------|
| <b>SUNDRY NOTICES AND REPORTS ON WELLS</b><br>(DO NOT USE THIS FORM FOR PROPOSALS TO DRILL OR TO DEEPEN OR PLUG BACK TO A DIFFERENT RESERVOIR. USE "APPLICATION FOR PERMIT" (FORM C-101) FOR SUCH PROPOSALS.)         |                                                                  |
| 1. Type of Well: Oil Well <input checked="" type="checkbox"/> Gas Well <input type="checkbox"/> Other <input type="checkbox"/>                                                                                        | 7. Lease Name or Unit Agreement Name<br><b>Grant 2 Fee</b>       |
| 2. Name of Operator<br><b>COG Operating LLC</b>                                                                                                                                                                       | 8. Well Number <b>3H</b>                                         |
| 3. Address of Operator<br><b>One Concho Center - 600 W Illinois Ave Midland, TX 79701</b>                                                                                                                             | 9. OGRID Number<br><b>229137</b>                                 |
| 4. Well Location<br>Unit Letter <b>O</b> : <b>150</b> feet from the <b>SOUTH</b> line and <b>1910</b> feet from the <b>EAST</b> line<br>Section <b>2</b> Township <b>19S</b> Range <b>26E</b> NMPM County <b>EDDY</b> | 10. Pool name or Wildcat<br><b>Dayton; Grayburg</b> <b>15960</b> |
| 11. Elevation (Show whether DR, RKB, RT, GR, etc.)<br><b>3282'</b>                                                                                                                                                    |                                                                  |

12. Check Appropriate Box to Indicate Nature of Notice, Report or Other Data

|                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                       |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>NOTICE OF INTENTION TO:</b><br>PERFORM REMEDIAL WORK <input type="checkbox"/> PLUG AND ABANDON <input type="checkbox"/><br>TEMPORARILY ABANDON <input type="checkbox"/> CHANGE PLANS <input type="checkbox"/><br>PULL OR ALTER CASING <input type="checkbox"/> MULTIPLE COMPL <input type="checkbox"/><br>DOWNHOLE COMMINGLE <input type="checkbox"/><br>OTHER: <b>Change BHL</b> <input checked="" type="checkbox"/> | <b>SUBSEQUENT REPORT OF:</b><br>REMEDIAL WORK <input type="checkbox"/> ALTERING CASING <input type="checkbox"/><br>COMMENCE DRILLING OPNS. <input type="checkbox"/> P AND A <input type="checkbox"/><br>CASING/CEMENT JOB <input type="checkbox"/><br>OTHER: <input type="checkbox"/> |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

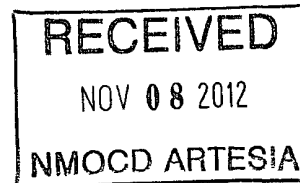
13. Describe proposed or completed operations. (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work). SEE RULE 19.15.7.14 NMAC. For Multiple Completions: Attach wellbore diagram of proposed completion or recompletion.

**COG Operating LLC submitted APD for this well at this location:**  
**SHL: 150 FSL 1910 FEL, Unit O**  
**BHL: 330 FNL 2260 FEL, Lot 2**

**COG Operating LLC respectfully requests permission to change the BHL to:**  
**SHL: 150 FSL 1910 FEL, Unit O**  
**BHL: 330 FNL 2331 FEL, Lot 2**

**Revision is due to skewed section and avoiding a non-standard location.**

**A revised Directional Plan and C102 is attached for your review.**



Spud Date:

Rig Release Date:

I hereby certify that the information above is true and complete to the best of my knowledge and belief.

SIGNATURE [Signature] TITLE Permitting Tech DATE 11-7-12

Type or print name Kelly J. Holly E-mail address: kholly@concho.com PHONE: 432-685-4384

**For State Use Only**

APPROVED BY: [Signature] TITLE Geologist DATE 11/15/2012

Conditions of Approval (if any):

DISTRICT I  
1625 N. FRENCH DR., HOBBS, NM 88240  
DISTRICT II  
1301 W. GRAND AVENUE, ARTESIA, NM 88210  
DISTRICT III  
1000 RIO BRAZOS RD., AZTEC, NM 87410  
DISTRICT IV  
11885 S. ST. FRANCIS DR., SANTA FE, NM 87505

State of New Mexico  
Energy, Minerals & Natural Resources Department  
**OIL CONSERVATION DIVISION**  
1220 South St. Francis Dr.  
Santa Fe, New Mexico 87505

Form C-102  
Revised July 16, 2010  
Submit to Appropriate  
District Office

☐ AMENDED REPORT

**WELL LOCATION AND ACREAGE DEDICATION PLAT**

|                                   |                                            |                                      |
|-----------------------------------|--------------------------------------------|--------------------------------------|
| API Number<br><b>30-015-39587</b> | Pool Code<br><b>15960</b>                  | Pool Name<br><b>Dayton; Grayburg</b> |
| Property Code                     | Property Name<br><b>GRANT 2 FEE</b>        | Well Number<br><b>3H</b>             |
| OGRID No.<br><b>229137</b>        | Operator Name<br><b>COG OPERATING, LLC</b> | Elevation<br><b>3282'</b>            |

Surface Location

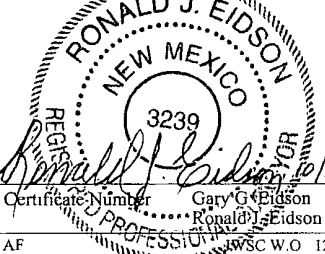
| UL or lot No. | Section | Township | Range | Lot Idn | Feet from the | North/South line | Feet from the | East/West line | County |
|---------------|---------|----------|-------|---------|---------------|------------------|---------------|----------------|--------|
| O             | 2       | 19-S     | 26-E  |         | 150           | SOUTH            | 1910          | EAST           | EDDY   |

Bottom Hole Location If Different From Surface

| UL or lot No. | Section | Township | Range | Lot Idn | Feet from the | North/South line | Feet from the | East/West line | County |
|---------------|---------|----------|-------|---------|---------------|------------------|---------------|----------------|--------|
| 2             | 2       | 19-S     | 26-E  |         | 330           | NORTH            | 2331          | EAST           | EDDY   |

| Dedicated Acres | Joint or Infill | Consolidation Code | Order No |
|-----------------|-----------------|--------------------|----------|
| 160             |                 |                    |          |

NO ALLOWABLE WILL BE ASSIGNED TO THIS COMPLETION UNTIL ALL INTERESTS HAVE BEEN CONSOLIDATED OR A NON-STANDARD UNIT HAS BEEN APPROVED BY THE DIVISION

|                                                                                                                                                                                                                                         |                               |                                                                                                                             |                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|-----------------------------------------------------------------------------------------------------------------------------|-------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>LOT 4</p> <p>GEODETIC COORDINATES<br/>NAD 27 NME<br/>SURFACE LOCATION<br/>Y=612106.0 N<br/>X=494974.6 E<br/>LAT=32.682778° N<br/>LONG.=104.349670° W<br/>39.39 AC.</p> <p>BOTTOM HOLE LOCATION<br/>Y=616900.6 N<br/>X=494538.0 E</p> | <p>LOT 3</p> <p>39.46 AC.</p> | <p>LOT 2</p> <p>39.52 AC.</p> <p>Producing Area</p> <p>Project Area</p> <p>HORIZ. DIST.=4815.7'<br/>GRID. AZ=354°47'50"</p> | <p>LOT 1</p> <p>39.59 AC.</p> | <p><b>OPERATOR CERTIFICATION</b></p> <p>I hereby certify that the information herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or unleased mineral interest in the land including the proposed bottom hole location or has a right to drill this well at this location pursuant to a contract with an owner of such mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division</p> <p> 11-7-12<br/>Signature Date</p> <p>Kelly J. Holly<br/>Printed Name</p> <p>kholly@concho.com<br/>E-mail Address</p> |
| <p>SECTION, QUARTER &amp; SIXTEENTH<br/>CORNER COORDINATES</p> <p>A - Y=611958.0 N, X=494246.8 E</p> <p>B - Y=611954.4 N, X=495565.7 E</p> <p>C - Y=617230.8 N, X=494205.5 E</p> <p>D - Y=617229.9 N, X=495536.6 E</p>                  |                               |                                                                                                                             |                               | <p><b>SURVEYOR CERTIFICATION</b></p> <p>I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief</p> <p>SEPTEMBER 26, 2011</p> <p>Date of Survey</p> <p>Signature &amp; Seal of Professional Surveyor.</p> <p></p> <p>Certificate Number Gary G. Eidson 12641<br/>Ronald J. Eidson 3239</p> <p>AF</p>                                                                                                                                                                                                    |



## **COG Operating LLC**

**Eddy County, NM (NAN27 NME)**

**Grant 2 Fee #3H**

**OH**

**Plan #2 8-3/4" Hole**

**Surface: 150' FSL, 1910' FEL, Sec 2, T19S, R26E, Unit O**

**PP: 330' FSL, 1926' FEL, Sec 2, T19S, R26E, Unit O**

**BHL: 330' FNL, 2331' FEL, Sec 2, T19S, R26E, Unit 2**

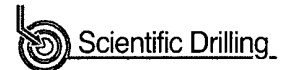
## **Standard Planning Report**

**02 November, 2012**





Scientific Drilling  
Planning Report



|           |                             |                              |                   |
|-----------|-----------------------------|------------------------------|-------------------|
| Database: | EDM 5000.1 Single User Db   | Local Co-ordinate Reference: | Well #3H          |
| Company:  | COG Operating LLC           | TVD Reference:               | GL @ 3282.00usft  |
| Project:  | Eddy County, NM (NAN27 NME) | MD Reference:                | GL @ 3282.00usft  |
| Site:     | Grant 2 Fee                 | North Reference:             | Grid              |
| Well:     | #3H                         | Survey Calculation Method:   | Minimum Curvature |
| Wellbore: | OH                          |                              |                   |
| Design:   | Plan #2 8-3/4" Hole         |                              |                   |

|             |                                      |               |                             |
|-------------|--------------------------------------|---------------|-----------------------------|
| Project:    | Eddy County, NM (NAN27 NME)          |               |                             |
| Map System: | US State Plane 1927 (Exact solution) | System Datum: | Mean Sea Level              |
| Geo Datum:  | NAD 1927 (NADCON CONUS)              |               |                             |
| Map Zone:   | New Mexico East 3001                 |               | Using geodetic scale factor |

|                       |             |              |                 |                   |                   |
|-----------------------|-------------|--------------|-----------------|-------------------|-------------------|
| Site:                 | Grant 2 Fee |              |                 |                   |                   |
| Site Position:        |             | Northing:    | 612,106.00 usft | Latitude:         | 32° 40' 58.000 N  |
| From:                 | Map         | Easting:     | 494,974.60 usft | Longitude:        | 104° 20' 58.800 W |
| Position Uncertainty: | 0.00 usft   | Slot Radius: | 13-3/16"        | Grid Convergence: | -0.01°            |

|                      |       |           |                     |                 |               |                   |
|----------------------|-------|-----------|---------------------|-----------------|---------------|-------------------|
| Well:                | #3H   |           |                     |                 |               |                   |
| Well Position        | +N/-S | 0 00 usft | Northing:           | 612,106 00 usft | Latitude:     | 32° 40' 58 000 N  |
|                      | +E/-W | 0 00 usft | Easting:            | 494,974 60 usft | Longitude:    | 104° 20' 58 800 W |
| Position Uncertainty |       | 0 00 usft | Wellhead Elevation: |                 | Ground Level: | 3,282 00 usft     |

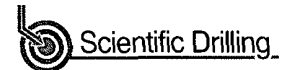
|           |            |             |                    |                  |                        |
|-----------|------------|-------------|--------------------|------------------|------------------------|
| Wellbore  | OH         |             |                    |                  |                        |
| Magnetics | Model Name | Sample Date | Declination<br>(°) | Dip Angle<br>(°) | Field Strength<br>(nT) |
|           | BGGM2012   | 11/1/2012   | 7.91               | 60.40            | 48,649                 |

|                   |  |                  |  |        |                     |               |  |           |  |
|-------------------|--|------------------|--|--------|---------------------|---------------|--|-----------|--|
| Design            |  |                  |  |        | Plan #2 8-3/4" Hole |               |  |           |  |
| Audit Notes:      |  |                  |  |        |                     |               |  |           |  |
| Version:          |  | Phase:           |  | PLAN   |                     | Tie On Depth: |  | 0 00      |  |
| Vertical Section: |  | Depth From (TVD) |  | +N/-S  |                     | +E/-W         |  | Direction |  |
|                   |  | (usft)           |  | (usft) |                     | (usft)        |  | (°)       |  |
|                   |  | 0 00             |  | 0 00   |                     | 0 00          |  | 354 80    |  |

|                |             |         |          |          |         |             |             |             |           |        |
|----------------|-------------|---------|----------|----------|---------|-------------|-------------|-------------|-----------|--------|
| Plan Sections: |             |         |          |          |         |             |             |             |           |        |
| Measured       | Inclination | Azimuth | Vertical | +N/-S    | +E/-W   | Dogleg      | Build       | Turn        | TFO       | Target |
| Depth          | (°)         | (°)     | Depth    | (usft)   | (usft)  | Rate        | Rate        | Rate        | (°)       |        |
| (usft)         |             |         | (usft)   |          |         | (°/100usft) | (°/100usft) | (°/100usft) |           |        |
| 0.00           | 0.00        | 0.00    | 0.00     | 0.00     | 0.00    | 0.00        | 0.00        | 0.00        | 0.00      |        |
| 2,272.54       | 0.00        | 0.00    | 2,272.54 | 0.00     | 0.00    | 0.00        | 0.00        | 0.00        | 0.00      |        |
| 3,022.54       | 90.00       | 354.80  | 2,750.00 | 475.50   | -43.30  | 12.00       | 12.00       | 0.00        | 354.80    |        |
| 7,359.95       | 90.00       | 354.80  | 2,750.00 | 4,795.04 | -436.64 | 0.00        | 0.00        | 0.00        | 0.00 PBHL |        |



Scientific Drilling  
Planning Report



|           |                             |                              |                   |
|-----------|-----------------------------|------------------------------|-------------------|
| Database: | EDM 5000 1 Single User Db   | Local Co-ordinate Reference: | Well #3H          |
| Company:  | COG Operating LLC           | TVD Reference:               | GL @ 3282 00usft  |
| Project:  | Eddy County, NM (NAN27 NME) | MD Reference:                | GL @ 3282 00usft  |
| Site:     | Grant 2 Fee                 | North Reference:             | Grid              |
| Well:     | #3H                         | Survey Calculation Method:   | Minimum Curvature |
| Wellbore: | OH                          |                              |                   |
| Design:   | Plan #2 8-3/4" Hole         |                              |                   |

| Planned Survey                       |                 |             |                       |              |              |                         |                         |                        |                       |
|--------------------------------------|-----------------|-------------|-----------------------|--------------|--------------|-------------------------|-------------------------|------------------------|-----------------------|
| Measured Depth (usft)                | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Vertical Section (usft) | Dogleg Rate (°/100usft) | Build Rate (°/100usft) | Turn Rate (°/100usft) |
| 0 00                                 | 0 00            | 0 00        | 0 00                  | 0 00         | 0 00         | 0 00                    | 0 00                    | 0 00                   | 0 00                  |
| 2,272.54                             | 0 00            | 0 00        | 2,272.54              | 0 00         | 0 00         | 0 00                    | 0 00                    | 0 00                   | 0 00                  |
| KOP Start Build 12.00                |                 |             |                       |              |              |                         |                         |                        |                       |
| 2,300 00                             | 3 30            | 354 80      | 2,299.98              | 0 79         | -0 07        | 0 79                    | 12 00                   | 12 00                  | 0.00                  |
| 2,400 00                             | 15 30           | 354 80      | 2,398.49              | 16 84        | -1 53        | 16 91                   | 12 00                   | 12 00                  | 0.00                  |
| 2,500 00                             | 27 30           | 354 80      | 2,491.49              | 52 95        | -4 82        | 53 17                   | 12 00                   | 12 00                  | 0.00                  |
| 2,600 00                             | 39 30           | 354 80      | 2,574.93              | 107 52       | -9 79        | 107 96                  | 12 00                   | 12 00                  | 0.00                  |
| 2,700 00                             | 51 30           | 354 80      | 2,645.14              | 178 17       | -16 22       | 178 91                  | 12 00                   | 12 00                  | 0.00                  |
| 2,702.34                             | 51 58           | 354 80      | 2,646.60              | 179 99       | -16 39       | 180 74                  | 12 00                   | 12 00                  | 0.00                  |
| PP=330' FSL                          |                 |             |                       |              |              |                         |                         |                        |                       |
| 2,800 00                             | 63 30           | 354 80      | 2,699.07              | 261 82       | -23 84       | 262 90                  | 12 00                   | 12 00                  | 0.00                  |
| 2,900 00                             | 75 30           | 354 80      | 2,734.36              | 354 80       | -32 31       | 356 27                  | 12 00                   | 12 00                  | 0.00                  |
| 3,000 00                             | 87 30           | 354 80      | 2,749.47              | 453 06       | -41 26       | 454 94                  | 12 00                   | 12 00                  | 0.00                  |
| 3,022.54                             | 90 00           | 354 80      | 2,750.00              | 475 50       | -43 30       | 477.46                  | 12 00                   | 12 00                  | 0.00                  |
| EOC Start 4337.41 hold at 3022.54 MD |                 |             |                       |              |              |                         |                         |                        |                       |
| 3,100 00                             | 90 00           | 354 80      | 2,750.00              | 552.64       | -50 32       | 554.93                  | 0 00                    | 0 00                   | 0.00                  |
| 3,200 00                             | 90 00           | 354 80      | 2,750.00              | 652.23       | -59 39       | 654.93                  | 0 00                    | 0 00                   | 0.00                  |
| 3,300 00                             | 90 00           | 354 80      | 2,750.00              | 751.82       | -68 46       | 754.93                  | 0 00                    | 0 00                   | 0.00                  |
| 3,400 00                             | 90 00           | 354 80      | 2,750.00              | 851.41       | -77 53       | 854.93                  | 0 00                    | 0 00                   | 0.00                  |
| 3,500 00                             | 90 00           | 354 80      | 2,750.00              | 950.99       | -86 60       | 954.93                  | 0 00                    | 0 00                   | 0.00                  |
| 3,600 00                             | 90 00           | 354 80      | 2,750.00              | 1,050.58     | -95 67       | 1,054.93                | 0 00                    | 0 00                   | 0.00                  |
| 3,700 00                             | 90 00           | 354 80      | 2,750.00              | 1,150.17     | -104 74      | 1,154.93                | 0 00                    | 0 00                   | 0.00                  |
| 3,800 00                             | 90 00           | 354 80      | 2,750.00              | 1,249.76     | -113 80      | 1,254.93                | 0 00                    | 0 00                   | 0.00                  |
| 3,900 00                             | 90 00           | 354 80      | 2,750.00              | 1,349.35     | -122 87      | 1,354.93                | 0 00                    | 0 00                   | 0.00                  |
| 4,000 00                             | 90 00           | 354 80      | 2,750.00              | 1,448.93     | -131 94      | 1,454.93                | 0 00                    | 0 00                   | 0.00                  |
| 4,100 00                             | 90 00           | 354 80      | 2,750.00              | 1,548.52     | -141 01      | 1,554.93                | 0 00                    | 0 00                   | 0.00                  |
| 4,200 00                             | 90 00           | 354 80      | 2,750.00              | 1,648.11     | -150 08      | 1,654.93                | 0 00                    | 0 00                   | 0.00                  |
| 4,300 00                             | 90 00           | 354 80      | 2,750.00              | 1,747.70     | -159 15      | 1,754.93                | 0 00                    | 0 00                   | 0.00                  |
| 4,400 00                             | 90 00           | 354 80      | 2,750.00              | 1,847.29     | -168 22      | 1,854.93                | 0 00                    | 0 00                   | 0.00                  |
| 4,500 00                             | 90 00           | 354 80      | 2,750.00              | 1,946.87     | -177 28      | 1,954.93                | 0 00                    | 0 00                   | 0.00                  |
| 4,600 00                             | 90 00           | 354 80      | 2,750.00              | 2,046.46     | -186 35      | 2,054.93                | 0 00                    | 0 00                   | 0.00                  |
| 4,700 00                             | 90 00           | 354 80      | 2,750.00              | 2,146.05     | -195 42      | 2,154.93                | 0 00                    | 0 00                   | 0.00                  |
| 4,800 00                             | 90 00           | 354 80      | 2,750.00              | 2,245.64     | -204 49      | 2,254.93                | 0 00                    | 0 00                   | 0.00                  |
| 4,900 00                             | 90 00           | 354 80      | 2,750.00              | 2,345.23     | -213 56      | 2,354.93                | 0 00                    | 0 00                   | 0.00                  |
| 5,000 00                             | 90 00           | 354 80      | 2,750.00              | 2,444.81     | -222 63      | 2,454.93                | 0 00                    | 0 00                   | 0.00                  |
| 5,100 00                             | 90 00           | 354 80      | 2,750.00              | 2,544.40     | -231 70      | 2,554.93                | 0 00                    | 0 00                   | 0.00                  |
| 5,200 00                             | 90 00           | 354 80      | 2,750.00              | 2,643.99     | -240 76      | 2,654.93                | 0 00                    | 0 00                   | 0.00                  |
| 5,300 00                             | 90 00           | 354 80      | 2,750.00              | 2,743.58     | -249 83      | 2,754.93                | 0 00                    | 0 00                   | 0.00                  |
| 5,400 00                             | 90 00           | 354 80      | 2,750.00              | 2,843.17     | -258 90      | 2,854.93                | 0 00                    | 0 00                   | 0.00                  |
| 5,500 00                             | 90 00           | 354 80      | 2,750.00              | 2,942.75     | -267 97      | 2,954.93                | 0 00                    | 0 00                   | 0.00                  |
| 5,600 00                             | 90 00           | 354 80      | 2,750.00              | 3,042.34     | -277 04      | 3,054.93                | 0 00                    | 0 00                   | 0.00                  |
| 5,700 00                             | 90 00           | 354 80      | 2,750.00              | 3,141.93     | -286 11      | 3,154.93                | 0 00                    | 0 00                   | 0.00                  |
| 5,800 00                             | 90 00           | 354 80      | 2,750.00              | 3,241.52     | -295 18      | 3,254.93                | 0 00                    | 0 00                   | 0.00                  |
| 5,900 00                             | 90 00           | 354 80      | 2,750.00              | 3,341.11     | -304 24      | 3,354.93                | 0 00                    | 0 00                   | 0.00                  |
| 6,000 00                             | 90 00           | 354 80      | 2,750.00              | 3,440.69     | -313 31      | 3,454.93                | 0 00                    | 0 00                   | 0.00                  |
| 6,100 00                             | 90 00           | 354 80      | 2,750.00              | 3,540.28     | -322 38      | 3,554.93                | 0 00                    | 0 00                   | 0.00                  |
| 6,200 00                             | 90 00           | 354 80      | 2,750.00              | 3,639.87     | -331 45      | 3,654.93                | 0 00                    | 0 00                   | 0.00                  |
| 6,300 00                             | 90 00           | 354 80      | 2,750.00              | 3,739.46     | -340 52      | 3,754.93                | 0 00                    | 0 00                   | 0.00                  |
| 6,400 00                             | 90 00           | 354 80      | 2,750.00              | 3,839.05     | -349 59      | 3,854.93                | 0 00                    | 0 00                   | 0.00                  |
| 6,500 00                             | 90 00           | 354 80      | 2,750.00              | 3,938.63     | -358 66      | 3,954.93                | 0 00                    | 0 00                   | 0.00                  |
| 6,600 00                             | 90 00           | 354 80      | 2,750.00              | 4,038.22     | -367 72      | 4,054.93                | 0 00                    | 0 00                   | 0.00                  |
| 6,700 00                             | 90 00           | 354 80      | 2,750.00              | 4,137.81     | -376 79      | 4,154.93                | 0 00                    | 0 00                   | 0.00                  |
| 6,800 00                             | 90 00           | 354 80      | 2,750.00              | 4,237.40     | -385 86      | 4,254.93                | 0 00                    | 0 00                   | 0.00                  |



Scientific Drilling  
Planning Report



|           |                             |                              |                   |
|-----------|-----------------------------|------------------------------|-------------------|
| Database: | EDM 5000 1 Single User Db   | Local Co-ordinate Reference: | Well #3H          |
| Company:  | COG Operating LLC           | TVD Reference:               | GL @ 3282 00usft  |
| Project:  | Eddy County, NM (NAN27 NME) | MD Reference:                | GL @ 3282 00usft  |
| Site:     | Grant 2 Fee                 | North Reference:             | Grd               |
| Well:     | #3H                         | Survey Calculation Method:   | Minimum Curvature |
| Wellbore: | OH                          |                              |                   |
| Design:   | Plan #2 8-3/4" Hole         |                              |                   |

| Planned Survey        |                 |             |                       |              |              |                         |                         |                        |                       |
|-----------------------|-----------------|-------------|-----------------------|--------------|--------------|-------------------------|-------------------------|------------------------|-----------------------|
| Measured Depth (usft) | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Vertical Section (usft) | Dogleg Rate (°/100usft) | Build Rate (°/100usft) | Turn Rate (°/100usft) |
| 6,900 00              | 90 00           | 354 80      | 2,750 00              | 4,336 99     | -394 93      | 4,354 93                | 0 00                    | 0 00                   | 0 00                  |
| 7,000 00              | 90 00           | 354 80      | 2,750.00              | 4,436 57     | -404 00      | 4,454 93                | 0 00                    | 0 00                   | 0 00                  |
| 7,100 00              | 90 00           | 354 80      | 2,750 00              | 4,536 16     | -413 07      | 4,554 93                | 0 00                    | 0 00                   | 0 00                  |
| 7,200 00              | 90 00           | 354 80      | 2,750 00              | 4,635 75     | -422 13      | 4,654 93                | 0 00                    | 0 00                   | 0 00                  |
| 7,300 00              | 90 00           | 354.80      | 2,750 00              | 4,735 34     | -431 20      | 4,754 93                | 0 00                    | 0 00                   | 0 00                  |
| 7,359 95              | 90 00           | 354 80      | 2,750 00              | 4,795 04     | -436 64      | 4,814.88                | 0 00                    | 0 00                   | 0 00                  |
| PBHL                  |                 |             |                       |              |              |                         |                         |                        |                       |

| Design Targets            |               |              |            |              |              |                 |                |                  |                   |
|---------------------------|---------------|--------------|------------|--------------|--------------|-----------------|----------------|------------------|-------------------|
| Target Name               | Dip Angle (°) | Dip Dir. (°) | TVD (usft) | +N/-S (usft) | +E/-W (usft) | Northing (usft) | Easting (usft) | Latitude         | Longitude         |
| - hit/miss target         |               |              |            |              |              |                 |                |                  |                   |
| - Shape                   |               |              |            |              |              |                 |                |                  |                   |
| PP=330' FSL               | 0 00          | 360 00       | 2,646 61   | 180 00       | -16 39       | 612,285 99      | 494,958 21     | 32° 40' 59 781 N | 104° 20' 58 992 W |
| - plan hits target center |               |              |            |              |              |                 |                |                  |                   |
| - Point                   |               |              |            |              |              |                 |                |                  |                   |
| PBHL                      | 0 00          | 0 00         | 2,750 00   | 4,795 04     | -436 64      | 616,900 60      | 494,538 00     | 32° 41' 45 445 N | 104° 21' 3 918 W  |
| - plan hits target center |               |              |            |              |              |                 |                |                  |                   |
| - Point                   |               |              |            |              |              |                 |                |                  |                   |

| Plan Annotations      |                       |                   |              |                                      |
|-----------------------|-----------------------|-------------------|--------------|--------------------------------------|
| Measured Depth (usft) | Vertical Depth (usft) | Local Coordinates |              | Comment                              |
|                       |                       | +N/-S (usft)      | +E/-W (usft) |                                      |
| 2,272 54              | 2,272 54              | 0 00              | 0 00         | KOP Start Build 12 00                |
| 3,022 54              | 2,750 00              | 475 50            | -43 30       | EOC Start 4337 41 hold at 3022.54 MD |



Grant 2 Fee #3H  
Eddy County, NM (NAN27 NME)  
Northing: (Y) 612106.00  
Easting: (X) 494974.60  
Plan #2 8-3/4" Hole



Azimuths to Grid North  
True North 0 01°  
Magnetic North 7 92°

Magnetic Field  
Strength 48649 3snT  
Dip Angle 60 40°  
Date 11/1/2012  
Model BGGM2012

To convert a Magnetic Direction to a Grid Direction, Add 7 92°  
To convert a True Direction to a Grid Direction, Add 0 01°

#### WELL DETAILS.

| +N/-S | +E/-W | Ground Level | 3282 00   | Latitude         | Longitude         |
|-------|-------|--------------|-----------|------------------|-------------------|
| 0 00  | 0 00  | Northing     | 612106 00 | Easting          | 494974 60         |
|       |       |              |           | 32° 40' 58 000 N | 104° 20' 58 800 W |

#### SECTION DETAILS

| MD      | Inc   | Azi    | TVD     | +N/-S   | +E/-W   | Dleg  | TFace  | Vsect  | Target |
|---------|-------|--------|---------|---------|---------|-------|--------|--------|--------|
| 0 00    | 0 00  | 0 00   | 0 00    | 0 00    | 0 00    | 0 00  | 0 00   | 0 00   |        |
| 2272 54 | 0 00  | 0 00   | 2272 54 | 0 00    | 0 00    | 0 00  | 0 00   | 0 00   |        |
| 3022 54 | 90 00 | 354 80 | 2750 00 | 475 50  | -43 30  | 12 00 | 354 80 | 477 46 |        |
| 7359 95 | 90 00 | 354 80 | 2750 00 | 4795 04 | -436 64 | 0 00  | 0 00   | 0 00   | 0 00   |

#### DESIGN TARGET DETAILS

| Name                   | TVD     | +N/-S   | +E/-W   | Northing  | Easting   |
|------------------------|---------|---------|---------|-----------|-----------|
| PP=330° FSL, Grant #3H | 2646 61 | 180 00  | -16 39  | 612285 98 | 494958 21 |
| PBHL-Grant 2 Fee #3H   | 2750 00 | 4795 04 | -436 64 | 616900 60 | 494538 00 |

**SITE DETAILS:** Grant 2 Fee  
Site Centre Northing 612106 00  
Easting 494974 60

Positional Uncertainty 0 00  
Convergence -0 01  
Local North Grd

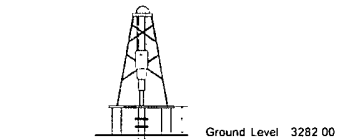
Map System US State Plane 1927 (Exact solution)  
Datum NAD 1927 (NADCON CONUS)  
Ellipsoid Clarke 1866  
Zone Name New Mexico East 3001  
Local Origin Well #3H, Grd North  
Latitude 32° 40' 58 000 N  
Longitude 104° 20' 58 800 W

Grid East 494974 60  
Grid North 612106 00  
Scale Factor 1 000

Geomagnetic Model BGGM2012  
Sample Date 01-Nov-12  
Magnetic Declination 7 91°  
Dip Angle from Horizontal 60 40°  
Magnetic Field Strength 48649

To convert a Magnetic Direction to a Grid Direction, Add 7 92°  
To convert a Magnetic Direction to a True Direction, Add 7 91° East  
To convert a True Direction to a Grid Direction, Add 0 01°

**PROJECT DETAILS:** Eddy County, NM (NAN27 NME)  
Geodetic System US State Plane 1927 (Exact solution)  
Datum NAD 1927 (NADCON CONUS)  
Ellipsoid Clarke 1866  
Zone New Mexico East 3001  
System Datum Mean Sea Level



Julio Pina  
13 00 November 01 2012  
Scientific Drilling  
2034 Trade Drive  
Midland, TX 79703

